

Abstract

System and methods for evaluating a charge state of a battery are provided. A light source is configured for emitting light through an electrolyte contained within the battery. An optical element determines the charge state based on the light passing through the electrolyte. The optical element may comprise an optical sensor such as a CCD. Such a CCD may be used to determine the location of light impinging the surface of the CCD. In one embodiment, the system includes a processor for determining the index of refraction for the electrolyte based on the location where refracted light impinges a CCD. From that index of refraction, a specific gravity of the electrolyte may be calculated to determine the charge state of the battery.